

**Remarks**

Applicant has amended claims 1, 15, 25 and 34. Applicant respectfully submits that no new matter was added by the amendment, as all of the amended matter was either previously illustrated or described in the drawings, written specification and/or claims of the present application. (See, Pars. 17 & 19). Entry of the amendment and favorable consideration thereof is earnestly requested.

**Claim 1**

The Examiner has rejected claim 1 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,046,769 ("Ikeda et al.") in view of U.S. Patent No. 6,870,566 ("Koide et al."), U.S. Patent No. 6,753,901 ("Takahashi et al.") and U.S. Patent No. 6,836,290 ("Chung et al.").

Claim 1 requires among other limitations "a camera head . . . including: a converter, for converting the analog image signal into the digital image signal." The Examiner has submitted that while "Ikeda et al. does not teach that the camera head includes an A/D converter in the camera head . . . [h]owever, Koide et al. teaches a video imaging system . . . that converts the image signal from analog to digital before transmitting it from the camera head . . . [t]herefore it would have been obvious to . . . have moved A/D 151 from the CCU 140 to the camera head 100 as . . . this would reduce the effects of noise on the image signal." (Official Action 2/8/07, p. 5.) Applicant respectfully disagrees.

Ikeda et al. teaches that an "object of the present invention is to improve the angular speed of the pan head by reducing the weight of the video camera which is one of the heavy elements on the upper portion of the pan head." (Col. 3, Ins. 59-62; See, Col. 3, Ins. 21-27, "In order to improve the angular speed of the pan head, there are considered to . . . Reduce the weight of the upper portion of the pan head.") Ikeda et al.

then states that “[i]n order to achieve the aforesaid object, there is provided an image sensing apparatus comprising: a camera head unit . . . and an image signal processing unit which comprises: signal processing means.” (Col. 3, In. 63 – Col. 4, In. 4; See, Col. 4, Ins. 11-17.) The camera is limited to including the absolute minimum of components listed as: “image forming means”, “image sensing means” and “control means.” (Col. 3, In. 65 – Col. 4, In. 2.) To accomplish the stated object of the invention, Ikeda et al. teaches that signal processing (and the associated equipment to do so) is located in the image signal processing unit “reducing the weight of the video camera.” (Col. 3, Ins. 60-61.) Accordingly, while the Examiner has submitted that it would be obvious to move a portion of the signal processing equipment from the CCU to the camera per claim 1, this works directly contrary to the teachings of Ikeda et al. and therefore cannot be obvious as submitted by the examiner. MPEP 2143.01; *In re Gordon*, 733 F.2d 900, 221 USPQ2d 1125 (Fed. Cir. 1984) (if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.)

Accordingly, Applicant respectfully submits that the combination and modification of Ikeda et al. with Koide et al. as suggested by the Examiner is inappropriate.

The Examiner next submits that “Ikeda et al. does not teach that the camera head includes a serializer, however Takahashi et al. teaches an endoscope imaging system where the video signal is passed through a serializer . . . [t]herefore it would have been obvious to one of ordinary skill in the art . . . to have included a serializer in the camera head . . . as this would allow for the use of a minimum number of conductors for passing the signal from the camera head to the camera control unit and would thus allow for the cable connecting the two to be made smaller and therefore further easing the discomfort of a person on which the endoscope was being used.” (Official Action 2/8/07, p. 5.) Applicant respectfully disagrees.

Again, the Examiner seeks to add still more equipment to the camera in contravention to the objectives of Ikeda et al. As stated above, Ikeda et al. specifically teaches that “reducing the weight of the video camera” is critical. (Col. 3, Ins. 60-61.) Therefore, stating that it would be obvious to position yet more equipment in the camera, thereby increasing the weight of the device, works contrary to the teachings of Ikeda et al. and cannot be obvious. MPEP 2143.01; *In re Gordon*, 733 F.2d 900, 221 USPQ2d 1125 (Fed. Cir. 1984). In addition, the Examiner has submitted that it would be obvious to modify Ikeda et al. with Takahashi et al. where the motivation is “easing the discomfort of a person on which the endoscope was being used.” (Official Action 2/8/07, p. 5.) However, Ikeda et al. is not directed toward use with an endoscope. Rather, Ikeda et al. is directed toward “an image sensing apparatus for inputting images into computers” for use in teleconferences and states “[t]his is very important to design such system that detects verbal sound of a speaker and pans the video camera to pick up the image of a speaker as soon as possible” and that “[i]n order to improve the angular speed of the pan head there are considered to . . . [r]educe the weight of the upper portion of the pan head . . . by reducing the weight of the video camera.” (Col. 3, Ins. 15-17, 27 & 60-61.) Accordingly, the motivation provided for modifying Ikeda et al. with Takahashi et al., namely, “easing the discomfort of a person on which the endoscope is being used”, has absolutely no application for Ikeda et al.

The Examiner further submits that “none of the above teaches using digital serial drivers and receivers to transmit data from a camera head to a camera control unit” that “Chung et al. teaches an imager utilizing at least one digital driver.” (Official Action 2/8/07, p. 6.) The Examiner therefore concludes that “it would have been obvious to . . . have used the digital serial driver taught by Chung et al. to transmit signals in the system taught by Ikeda et al. as this is a low power system that allows for the use of differential signal that are resistant to EMI noise.” (*Id.*)

The Examiner again seeks to add more and more equipment to the camera head in contravention of Ikeda et al. Accordingly, Applicant respectfully submit that such a

modification cannot be obvious in view of the clear teachings of Ikeda et al. MPEP 2143.01; *In re Gordon*, 733 F.2d 900, 221 USPQ2d 1125 (Fed. Cir. 1984).

It is well settled that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. See, e.g., MPEP 2143.01 ("The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination."); *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990) (fact that prior art "may be capable of being modified to run the way the apparatus is claimed, there must be some suggestion or motivation in the reference to do so."). In the present case, Applicant respectfully submits that the Examiner has had to combine numerous references to formulate the rejection under §103 to modify the references in a manner specifically rejected by the references themselves. Accordingly, not only is there no suggestion in the references themselves for the suggested combination/modification, such a combination would result in a device specifically rejected by Ikeda et al.

Applicant still further submits that where reference include divergent teachings, combination of the references and subsequent adoption of one of the references teachings and discarding of the second reference's teachings is inappropriate. *In re Arkley*, 455 F.2d 586, 587-88, 172 U.S.P.Q. 524, 526 (C.C.P.A. 1972) (A reference must be considered for its teachings as a whole and it is inappropriate to pick and choose various elements from the references without regard to what the references teach as a whole.) In this case, Chung et al. teaches that the "data transfers width is set to the word width, which allows a fixed timing relationship between the clock edge and data transfer in both single-ended and differential modes" and that "[t]his fixed timing relationship eliminates the need for and cost of explicit bit synchronization." (Col. 3, Ins. 30-36). The teachings of Chung et al. are therefore at odds with the teachings of Ikeda et al. where the Examiner has submitted with respect to Ikeda et al. that "the format and timing of the camera head is crucial to the functioning of the camera control

unit.” (Official Action 2/8/07, p. 2.) Applicant respectfully submits that it cannot be obvious to discard the teachings of Chung et al. in favor of the teachings of Ikeda et al. and that any rejection based on a combination of these two inherently incompatible references is inappropriate. *In re Arkley*, 455 F.2d 586, 587-88, 172 U.S.P.Q. 524, 526 (C.C.P.A. 1972).

#### Claim 15

The Examiner has rejected claim 15 under 35 U.S.C. §103(a) as unpatentable over Ikeda et al. in view of Chung et al.

Claim 15 requires among other limitations “a camera head . . . including: an imager, for generating the image signal; and . . . at least one digital serial driver.”

The Examiner has submitted that Ikeda et al. doesn’t teach “using digital serial drivers and receivers to transmit data from a camera head to a camera control unit” but that Chung et al. does that that it would be obvious to modify Ikeda et al. in view of Chung et al. (Official Action 2/8/07, pp. 9-10.)

Initially, Applicant notes that, the combination suggested by the Examiner would require Ikeda et al. to include not only a digital serial driver, but also an Analog to Digital converter as the system in Ikeda et al. generates and transmits an analog video signal from the camera to the camera control unit and a digital serial driver cannot transmit an analog signal. (See, FIGS. 1, 2 & 5.) Therefore, the Examiner is submitting that it would be obvious to modify Ikeda et al. to include both an A/D converter and a digital serial driver in the camera head. Applicant respectfully disagrees.

As stated above in connection with claim 1, a stated object of Ikeda et al. is to minimize the weight of the camera, not to increase the weight/complexity of the camera by relocating equipment from the controller to the camera.

Applicant respectfully submits that “[t]here must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself.” *In re Oetiker*, 977 F.2d, 1443, 1447 (Fed. Cir. 1992). See also *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). In the present case, the Examiner’s suggested combinations are, in fact, rejected by the prior art such that, the only motivation for combining/modifying the cited references are the presently pending claims, which is inappropriate. See e.g. *W.L. Gore and Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13, (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) (It is impermissible to assemble the prior art using the pending claims as a roadmap to select various features from the prior art where there is no motivation in the references themselves for doing so.)

Applicant further notes that, as argued in connection with claim 1, any combination of Ikeda et al. with Chung et al. in formulating an obviousness rejection is inappropriate as the two references are inherently incompatible. *In re Arkley*, 455 F.2d 586, 587-88, 172 U.S.P.Q. 524, 526 (C.C.P.A. 1972).

#### Claim 25

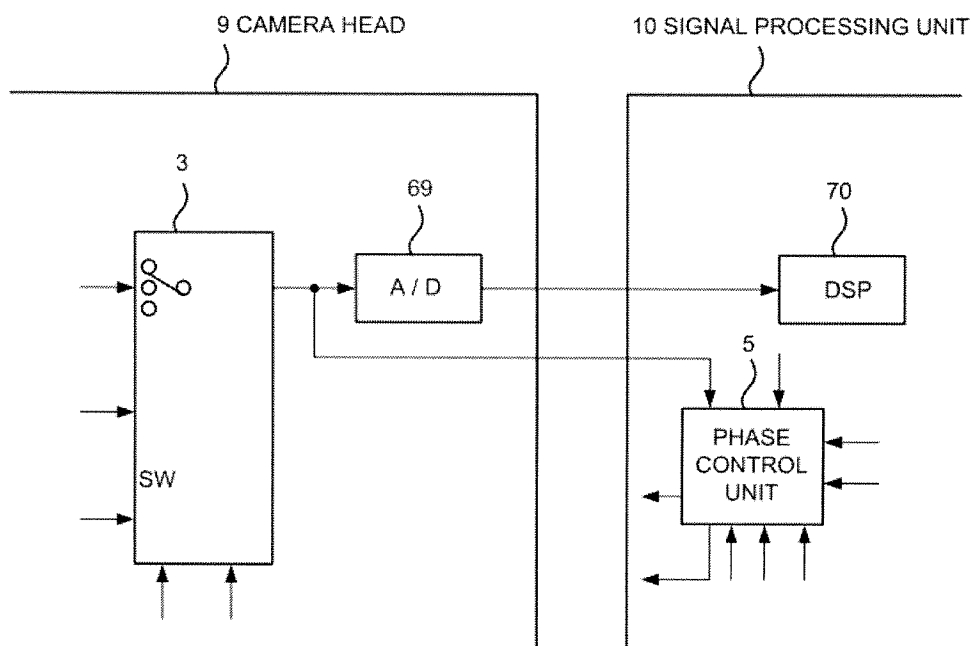
The Examiner has rejected claim 25 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,449,007 (“Yokoyama”) in view of Koide et al. and Takahashi et al.

Claim 25 requires among other limitations a “camera head including: . . . a converter, for converting the analog image signal into the digital image signal; and a serializer, for serializing the digital image data.”

The Examiner has submitted that Yokoyama does not “teach is the camera head including a converter for converting the analog signal into a digital signal. However . . . Koide et al. teaches an analog to digital converter 103 in an image sensing unit 11” and

“[t]herefore it would have been obvious . . . to have moved the analog to digital converter of Yokoyama from the CCU 10 to the camera head 9 as taught by Koide et al.” (Official Action 2/8/07, p. 14.)

Applicant has first submitted that Yokoyama teaches that it is an object “to provide an image sensing system having a camera head unit and a signal processing unit connected by a less number of signal lines by transmitting a clock signal, a horizontal synchronizing signal, and a CCD signal via a single signal line” and that to move the A/D converter would, in fact, increase the number of signals required between the camera and the control unit. (Col. 2, ln. 64 – Col. 3, ln. 2.) Applicant has secondly submitted that it can be seen from FIG. 1 that the SW (3) signal that includes CCD, HD and CLK signals are input into both A/D converter 69 and Phase Control Unit 5 and that if the A/D converter 69 was moved to the camera head as suggested, the CCD, HD and CLK signals would still have to be input into Phase Control Unit 5. This would require an increase in signal lines between the camera head and the signal processing unit as illustrated below.



In response to this, the Examiner has simply stated “there is no teaching in Yokoyama that the CCD signal must be input into the phase controller 5.” (Official Action 2/8/07, p. 3.) Applicant respectfully disagrees as it is clear that the output line from switch (SW) 3 is input into both A / D 69 and phase control unit 5 and the output signal includes each of the CCD, HD and CLK signals. (See, FIG. 1.) The Examiner has provided no evidence that the system taught in Yokoyama et al. would function properly by inputting a signal to the phase control unit 5 from a point after A / D 69. MPEP 2143.01; *In re Gordon*, 733 F.2d 900, 221 USPQ2d 1125 (Fed. Cir. 1984) (If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.) Applicant further respectfully submits that such a modification would require a drastic redesign of the system and is unclear whether such a modification would function properly in view of the disclosed system. For example, Yokoyama teaches that the SW 3 transmits the CCD signal from the AGC 63, which is an analog signal. Therefore, SW 3 would have to be replaced with a device that could transmit a digital signal and there is no suggestion in the references for making such a modification. MPEP 2143.01 (“The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.”); *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990) (fact that prior art “may be capable of being modified to run the way the apparatus is claimed, there must be some suggestion or motivation in the reference to do so.”).

The Examiner has further submitted that while Yokoyama teaches connection between the camera and control unit “by a less number of lines . . . this does not address the problem of using a minimum number of conductors but of using less conductors.” (Official Action 2/8/07, p. 3.) Applicant submits that Yokoyama teaches that “it is possible to reduce the number of signal lines” and that the proposed



modification submitted by the Examiner will increase the number of signal lines in contravention to the objects of the invention. (Col. 7, Ins. 62-63; See, Col. 2, Ins. 66-67.)

Accordingly, Applicant respectfully submits that the combination and modification of Yokoyama with Koide et al. is inappropriate because it works in contravention with objects of the invention stated in Yokoyama and it is not even clear whether such a modification would result in a functioning system.

The Examiner has still further submitted that "Yokoyama does not teach that the camera head includes a serializer, however Takahashi et al. teaches an endoscopic imaging system where the video signal is passed through a serializer . . . [t]herefore it would have been obvious . . . to have included a serializer in the camera head of Yokoyama in view of Koide et al. as this would allow for the use of a minimum number of conductors for passing the signal from the camera head to the camera control unit." (Official Action 2/8/07, p. 14.) Applicant disagrees.

For example, Yokoyama states:

"Reference numeral 3 denotes a switch (SW) circuit which switches among a CCD signal from the AGC 63, a horizontal synchronizing (HD) signal, and a clock signal (CLK) under control of the CPU 1, and transmits one of the signals to the signal processing unit 10 via a single signal line (CCD line).

Positioning a serializer to receive the output of SW 3 and to subsequently transmit the serialized signal to DSP 70 and phase control unit 5 would not result in a functional system. Yokoyama is very clear that a single line is used for transmission of multiple signals. While the Examiner has submitted that it would be obvious to serialize the CCD signal, the Examiner has not commented on how the system could continue to function properly by running the HD and CLK signal through the serializer. While the HD and CLK signal could be split from the CCD signal, this would work in direct contravention to the stated objects of the invention to "provide an image sensing system having a camera head unit and a signal processing unit connected by a less number of

signal line by transmitting a clock signal, a horizontal synchronizing signal, and a CCD signal via a single signal lines in time division, which establishes synchronization between the camera head and the signal processing unit when the length of the signal lines are changed.” (Col. 2, ln. 66 – Col. 3, ln. 5.)

Accordingly, Applicant respectfully submits that the suggested modification of Yokoyama with Takahashi et al. would not result in a functioning system, and further, if the signal lines were separated, this would abandon the clear stated objects of Yokoyama. Accordingly, any rejection based on a combination of Yokoyama, Koide et al. and Takahashi et al. is inappropriate.

#### Claim 34

The Examiner has rejected claim 34 under 35 U.S.C. §103(a) as unpatentable over Koide et al. in view of Takahashi et al.

Claim 34 requires among other limitations a “camera head including: an imager, including an analog to digital converter for generating the stream of digital video data; and a serializer, for serializing the stream of digital video data for continuous transmission over said cable.”

Koide et al. is directed toward an image sensing device “capable of sensing an image at the highest possible rate that a computer can receive image data from an image sensing unit without any loss of the data.” (Col. 6, lns. 3-5.) To accomplish this object, Koide et al. teaches “FIFO status flag 108 kept in the control unit 107 represents an amount of image signals stored in the FIFO memory 105, and it is updated as an image signal is inputted or outputted to/from the FIFO memory 105.” (Col. 10, lns. 1-4.) Koide et al. therefore, stores the images in FIFO memory and adjusts the rate at which images are transferred to the computer depending on the FIFO status flag. However, this system is not suitable for transmitting a stream of digital video data, which must continuously be provided to the user during, for example, a medical procedure. Koide

et al. cannot perform this function as the crux of the invention is to queue digital images and match the speed at which the computer can accept them. While this approach works for still pictures, it is unacceptable for a video stream as, for example, a doctor must be provided with a continuous video stream, not a delayed or discontinuous feed.

It is well settled that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. MPEP 2143.01; *In re Gordon*, 733 F.2d 900, 221 USPQ2d 1125 (Fed. Cir. 1984). In the present case, Applicant respectfully submits that Koide et al. teaches use of a system that maximizes the data transfer rate to the computer, but only to the point of "without any loss of the data" at which point the data is stored for later transmission. This system is simply not usable to transmit a continuous video stream without abandoning the queuing system; however, this would e abandon the very heart of the invention of Koide et al. and would work contrary to stated objects of the invention. Accordingly, such a modification cannot be obvious.

It is respectfully submitted that claims 1-4, 8-11, 13-20, 23-26 and 28-41, all of the claims remaining in the application, are in order for allowance and early notice to that effect is respectfully requested.

Respectfully submitted,

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